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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/824,016

04/13/2004

Dana Lee

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5951

26379

7590

08/04/2005

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EXAMINER

ROSE, KIESHA L

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-A

Office Action Summary	Application No. 10/824,016	Applicant(s) LEE ET AL.	
	Examiner Kiesha L. Rose	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/13/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the filing of the application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Wong (U.S. Patent 5,739,567).

Wong discloses a memory device (Figs. 5a and 12d) that contains a substrate (501) having a planar surface where the substrate is of a first conductivity type with a plurality of spaced apart trenches in the planar surface of the substrate (Col. 4, lines 20-25) in a first direction, each trench having a first sidewall, a second sidewall and a bottom wall, a pair of floating gates (505) along the first and second sidewalls in the trench each floating gate spaced apart from the first and second sidewall forming a first terminal (source) (502) of a second conductivity along the bottom wall of each trench, a control gate (509) which is insulated from and capacitively coupled to the floating gate and insulated from the first terminal along the bottom wall of the trench (Col. 6, lines 50-56), a conductor on planar surface (Col. 11, lines 11-16) which is spaced apart from the planar surface, patterning the conductor along a second direction substantially

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perpendicular to first direction to form a plurality of spaced apart strips of conductors (word lines) with an opening between each pair of conductor strips and cutting each pair of floating gates in each trench. (Col. 20, lines 50-57)

In regards to claims 2 and 9, Wong teaches forming a pair of floating gates, forming a layer of silicon dioxide (dielectric) along first sidewall, second sidewall and bottom wall of trench, depositing a layer of polysilicon along silicon dioxide of first and second sidewall and bottom wall and etching layer of polysilicon to remove layer from bottom wall, forming a pair of polysilicon floating gate spacers along the first and second sidewalls. (Col. 10, lines 25-60)

In regards to claims 3 and 10-11, Wong teaches that the floating gates are etched and would naturally leave somewhat rounded ends (Col. 10, lines 45-60) and has a tip along the floating gates at an end closest to the bottom of the trench and tip that is further away from the bottom wall

In regards to claim 5, Wong teaches the floating gates are etched and the control gates need not be etched. (Col. 20, lines 47-55)

In regards to claim 6, Wong teaches applying a mask layer (Fig. 10b, #1026) to form a plurality of masking strips (bit lines), define the trench openings and etching the trench openings.

In regards to claim 7, Wong teaches that the nitride (oxide) material (1427) can be deposited to form the bit lines and trench openings.

In regards to claim 8, Wong teaches etching the floating gates prior to the control gates because of the level of the control gates.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 571-272-1844. The examiner can normally be reached on M-F 8:30-6:00 off 2nd Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KLR


Michael Trinh
Primary Examiner
Act SPE